

The Influence of Emotional and Foreign Language Context in Learning

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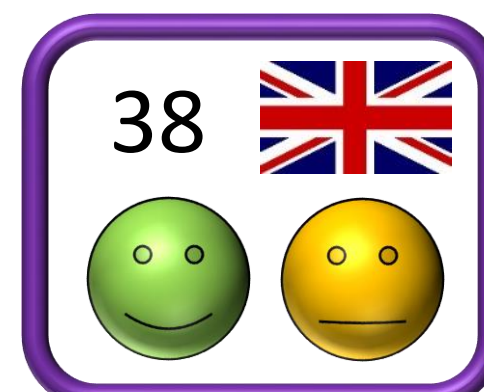
Introduction

- People remember things with emotional impact better (e.g., emotional content (1), context (2))
- Recognition performance is the same in a foreign and a native language, but there are some differences when information is interrelated as well as in recall (e.g., 3, 4)
- People are less emotional in a foreign language (e.g., 5, 6, 7, 8)

Do language and emotional context affect content learning?

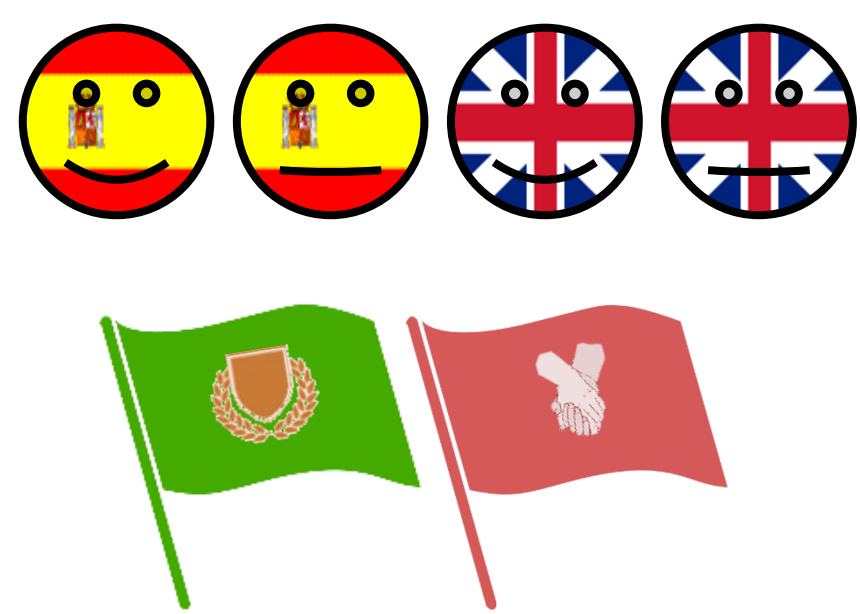
Procedure

Participants



Young adults
 30.5 (9.2) yrs old
 Native Spanish speakers
 B2-C1 level of English
 English AOA: ~10 years.

Stimuli

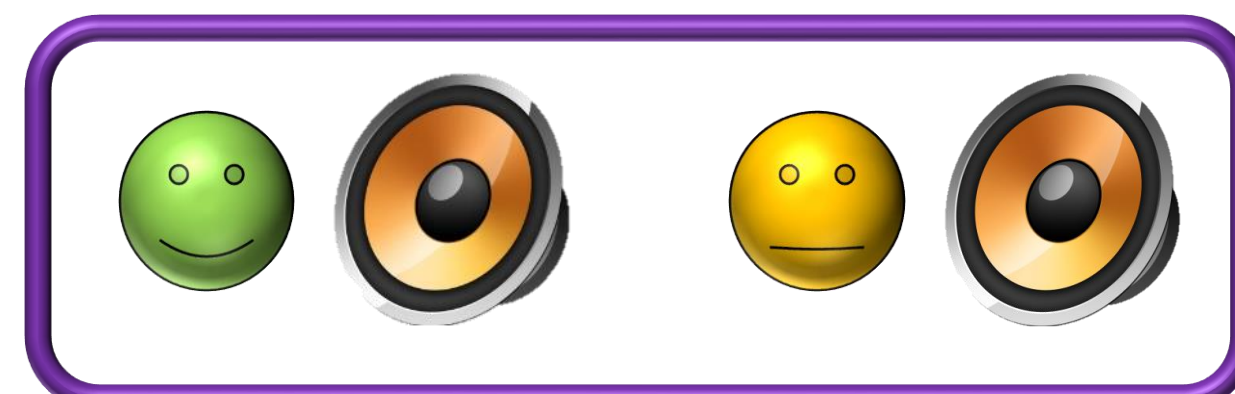
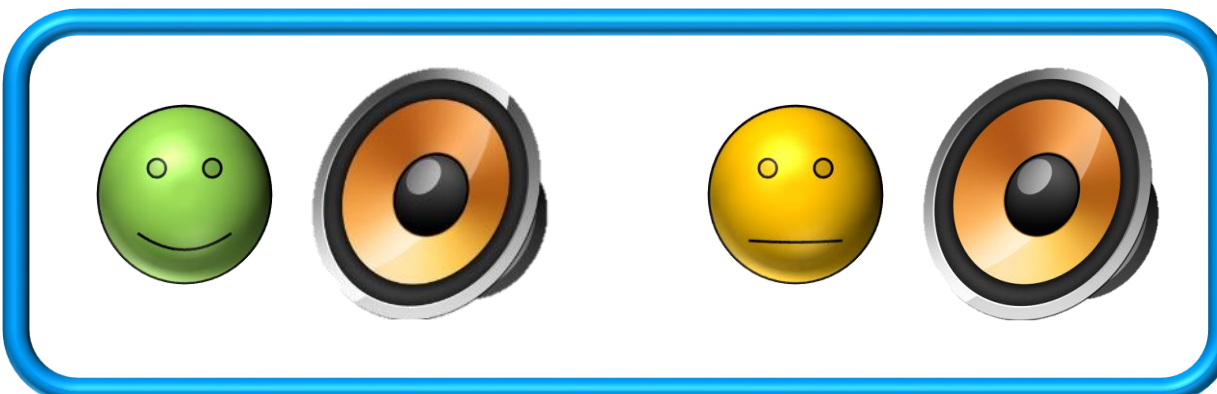


- 2 countries with 50 “facts” each
- Positive and neutral version of each
- Spanish and English version of each
- Internal consistency:
 Mufelo $\alpha = .84$; Tecamer $\alpha = .86$
- 7 to 8 min recordings
- 4 female native English voices
- 4 female native Spanish voices

Example Stimuli

	English	Spanish
Neutral	The population of Tecamer is defined politically as left wing, although they are considered generally quite moderate in their political, economic, and social opinions.	La población de Tecamer se define con inclinaciones políticas de izquierdas, aunque éstos se consideran por lo general bastante moderados en sus opiniones políticas, económicas y sociales.
Positive	The population of Tecamer is defined politically as left wing and supports freedom, tolerance, and social inclusion as well as equal opportunity, leading many campaigns against discrimination.	La población de Tecamer se define con inclinaciones políticas de izquierdas y apoya la libertad y tolerancia e inclusión social así como la igualdad de oportunidades, por lo que lideran muchas campañas contra la discriminación.

Learning Phase: Passive Listening



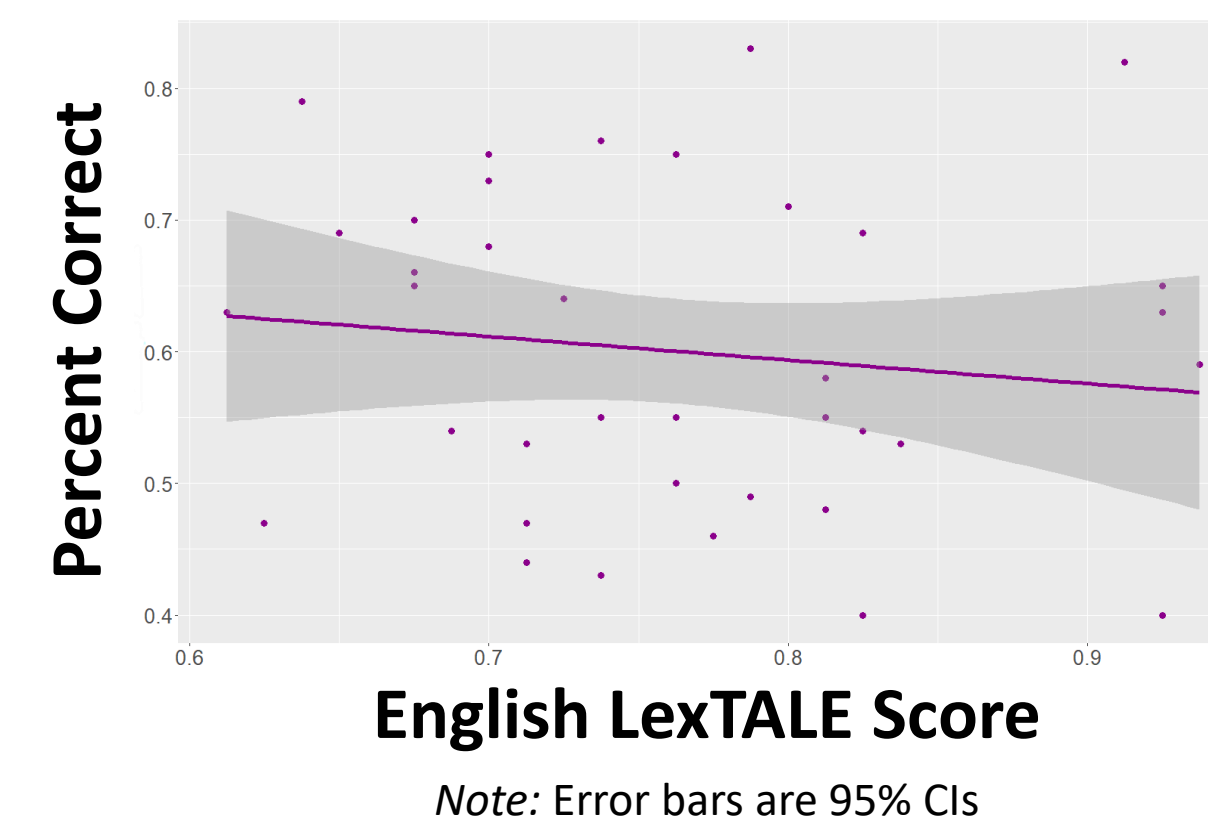
Testing Phase: Multiple Choice

What is the oldest monument in each country?		
	Mufelo	Tecamer
The opera in the capital	<input type="radio"/>	<input type="radio"/>
The roman bridge	<input type="radio"/>	<input type="radio"/>
The national museum	<input type="radio"/>	<input type="radio"/>
The temple in the capital	<input type="radio"/>	<input type="radio"/>

What was the most famous historical character in each country?		
	Mufelo	Tecamer
A scientist	<input type="radio"/>	<input type="radio"/>
An athlete	<input type="radio"/>	<input type="radio"/>
A singer	<input type="radio"/>	<input type="radio"/>
A politician	<input type="radio"/>	<input type="radio"/>

Results

Language Check for Foreign Language Condition

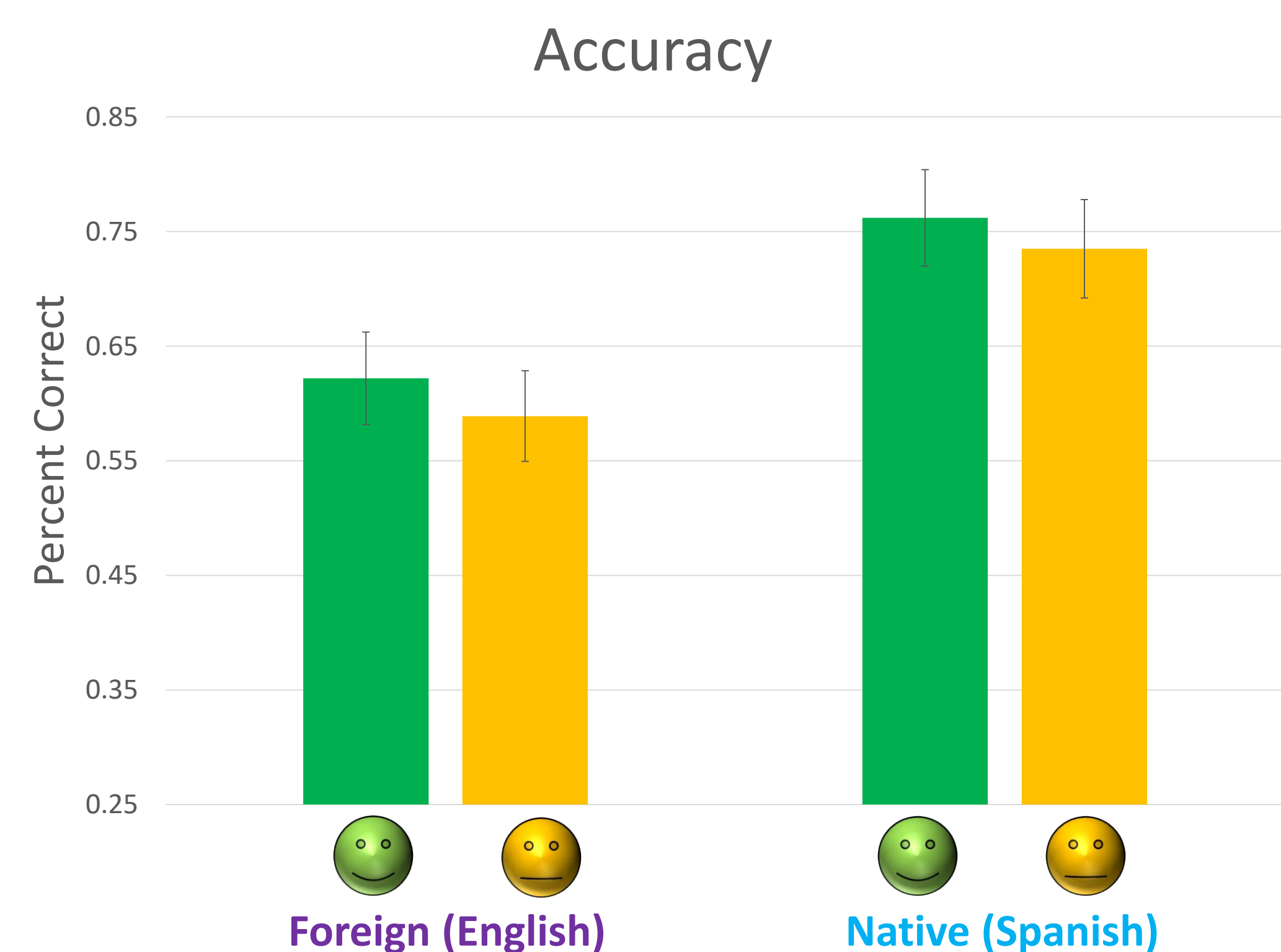


Correlation between English level and average score for Foreign Language condition:
 $BF_{01} = 3.691, p = .435$

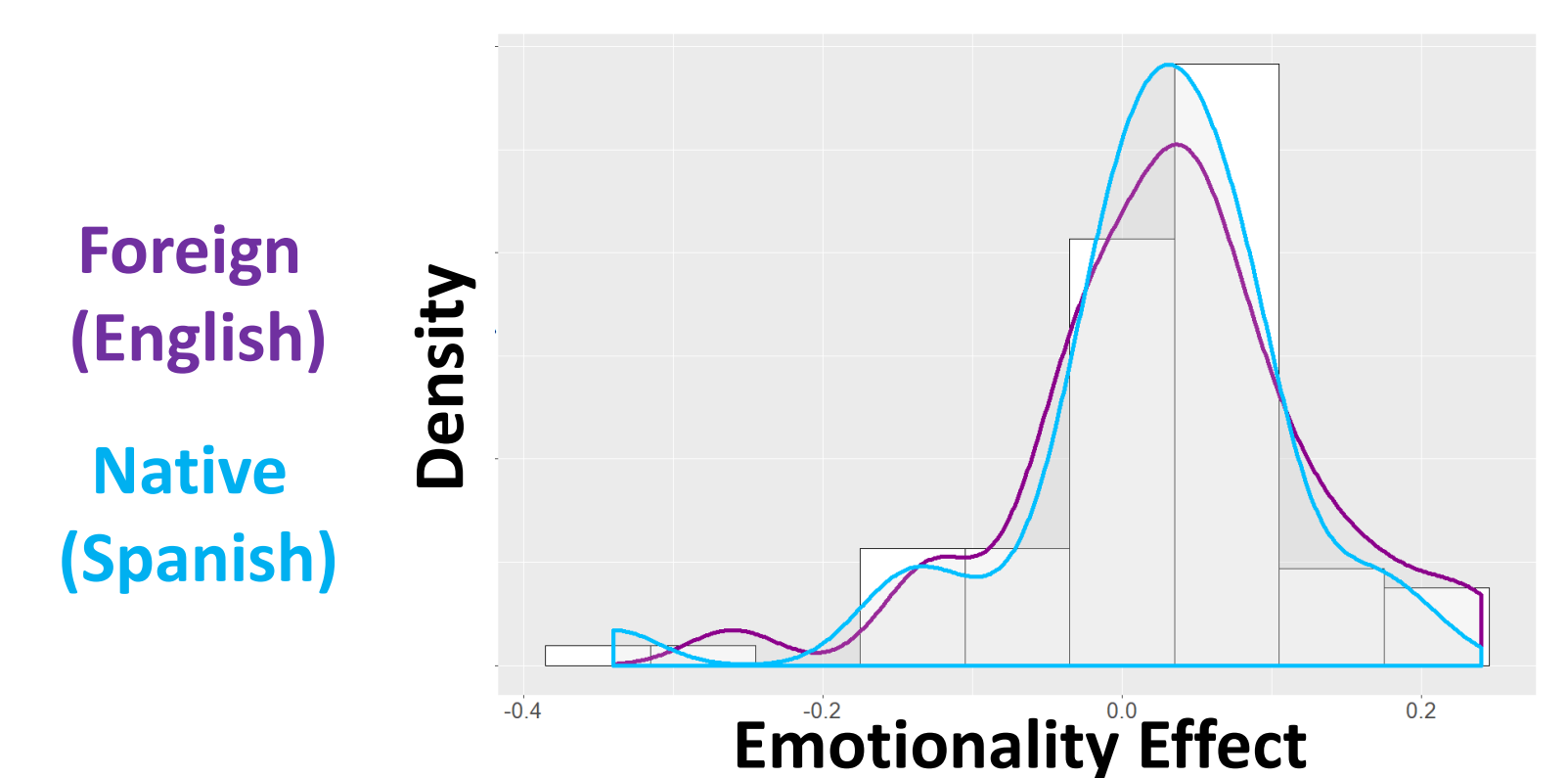
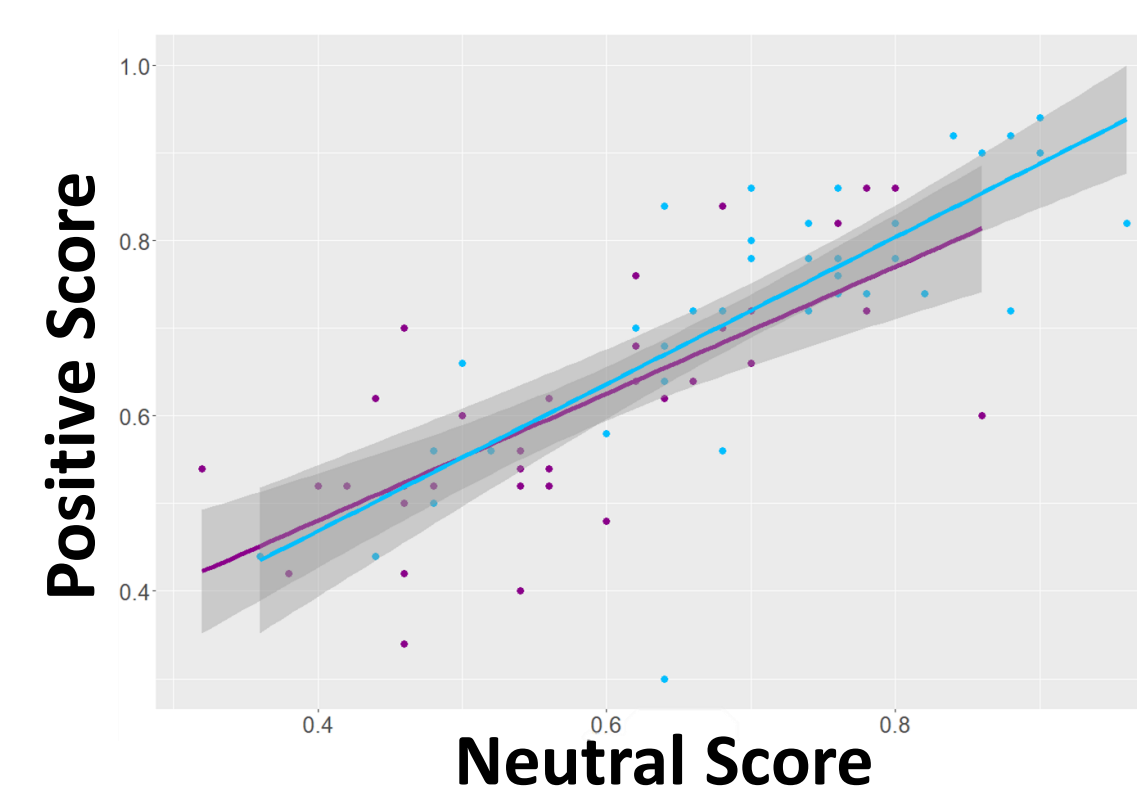
Note: Three participants were removed from the Spanish condition and one from the English condition due to low performance

Accuracy by Emotion and Language Condition

○ Native > Foreign $F(1,70) = 26.83, p < .001, \eta_p^2 = .277$ ○ Positive > Neutral $F(1,70) = 8.54, p = .005, \eta_p^2 = .109$ ○ No interaction $p = .75, BF_{01} = 4.09, \text{error}\% = 2.79$



Emotionality Effect Between Languages



The scores between the two conditions (namely, positive and neutral scores) were highly correlated overall, $R = .82, p < .001$, in the native language, $R = .80, p < .001$, and in the foreign language, $R = .71, p < .001$.

The effect of emotionality was the same between the two groups, $t(70) = .322, p = .748, BF_{01} = 3.93, \text{error}\% = .012$, but differed from 0, $t(71) = 2.95, p = .004$.

Conclusions

- People learn new concepts better in their native language, but their learning is not explained by their language skills in the foreign language.
- The **emotional context** affects our ability to learn new information.
- The emotional impact in a native and foreign language is the same.
- These effects are present in the auditory modality.

Are the foreign language effect and the decreased emotionality found in other studies due to the process of learning?

Do they disappear when concepts are learned in a context that is equally emotional as the one in which we learned our native language?

REFERENCES

- (1) Hamann, S. (2001). Cognitive and neural mechanisms of emotional memory. *Trends in Cognitive Sciences*, 5(9), 394–400.
- (2) Ehr, S., Kiefer, M., Grothe, J., Wunderlich, A. P., Spitzer, M., & Walter, H. (2003). Emotional context modulates subsequent memory effect. *NeuroImage*, 18(2), 439–447.
- (3) Vander Beken, H., & Brysbaert, M. (2017). Studying texts in a second language: the importance of test type. *Bilingualism: Language and Cognition*, 1–13.
- (4) Nott, C. R., & Lambert, W. E. (1968). Free Recall of Bilinguals. *Journal of Verbal Learning and Verbal Behavior*, 7, 1065–1071.
- (5) Costa, A., Foucart, A., Arnon, I., Aparici, M., & Apesteguia, J. (2014). “Piensa” twice: on the foreign language effect in decision making. *Cognition*, 130(2), 236–254.
- (6) Dewaele, J.-M. (2004). The Emotional Force of Swearwords and Taboo Words in the Speech of Multilinguals. *Journal of Multilingual and Multicultural Development*, 25(23), 204–222.
- (7) Hadjichristidis, C., Geipel, J., & Savadori, L. (2015). The effect of foreign language in judgments of risk and benefit: The role of affect. *Journal of Experimental Psychology: Applied*, 21(2), 117.
- (8) Keysar, B., Hayakawa, S. L., & An, S. G. (2012). The foreign-language effect: Thinking in a foreign tongue reduces decision biases. *Psychological science*, 23(6), 661–668.